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<u>L3</u>	(6326058 or 6089853).pn.\	2	<u>L3</u>
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<u>L2</u>	wo-9706012-\$.did.	2	<u>L2</u>
<u>L1</u>	20010013294.pn.	2	<u>L1</u>

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L1: Entry 2 of 2

File: DWPI

Jul 4, 2001

DERWENT-ACC-NO: 2001-650120

DERWENT-WEEK: 200175

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TITLE: Stamp device for large area printing in soft lithography, has rigid carrier layer which is provided with patterned layer and soft layer on either sides where soft layer is made of material softer than material of pattern layer

INVENTOR: BIETSCH, A; BRUNO, M ; DELAMARCHE, E ; SCHMID, H

## PATENT-ASSIGNEE:

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INT BUSINESS MACHINES CORP

IBM CORP

BIETSCH A

BRUNO M

DELAMARCHE E

SCHMID H

CODE

IBMC

IBMC

BIETI

BRUNI

DELAI

SCHMI

PRIORITY-DATA: 1999EP-0126245 (December 31, 1999)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
GB 2357731 A	July 4, 2001		030	B41N010/04
US 20010013294 A1	August 16, 2001		000	B41K001/38
JP 2001205909 A	July 31, 2001		013	B41K001/02
KR 2001062591 A	July 7, 2001		000	B41K003/00

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
GB 2357731A	December 21, 2000	2000GB-0031205	
US20010013294A1	December 28, 2000	2000US-0752616	
JP2001205909A	December 27, 2000	2000JP-0396889	
KR2001062591A	December 21, 2000	2000KR-0079756	

INT-CL (IPC): B41 F 31/00; B41 K 1/02; B41 K 1/38; B41 K 3/00; B41 K 3/04; B41 N 10/04

ABSTRACTED-PUB-NO: GB 2357731A

## BASIC-ABSTRACT:

NOVELTY - A two sided rigid carrier layer (1) made of metal, glass or quartz coil, has patterned layer (2) on one side and soft layer (5) on other side. The soft layer is made of layer material softer than material of patterned layer.

USE - Used for large area printing in soft lithography.

ADVANTAGE - Enhances thin film hybrid stamp in such a way that mechanized large area printing is possible. The printing results of a soft lithographic process using the

stamp device is of high quality even if the contacting plane between stamp and the surface of substrate differs from precise smooth and even plane.

DESCRIPTION OF DRAWING(S) - The figures show the stamp device with soft roller element, and soft layer and roller element.

Rigid carrier layer 1

Patterned layer 2

Soft layer 5 2a, 2b/6

ABSTRACTED-PUB-NO:

US20010013294A

EQUIVALENT-ABSTRACTS:

NOVELTY - A two sided rigid carrier layer (1) made of metal, glass or quartz coil, has patterned layer (2) on one side and soft layer (5) on other side. The soft layer is made of layer material softer than material of patterned layer.

USE - Used for large area printing in soft lithography.

ADVANTAGE - Enhances thin film hybrid stamp in such a way that mechanized large area printing is possible. The printing results of a soft lithographic process using the stamp device is of high quality even if the contacting plane between stamp and the surface of substrate differs from precise smooth and even plane.

DESCRIPTION OF DRAWING(S) - The figures show the stamp device with soft roller element, and soft layer and roller element.

Rigid carrier layer 1

Patterned layer 2

Soft layer 5

TITLE-TERMS: STAMP DEVICE AREA PRINT SOFT LITHO RIGID CARRY LAYER PATTERN LAYER SOFT LAYER SIDE SOFT LAYER MADE MATERIAL SOFT MATERIAL PATTERN LAYER

DERWENT-CLASS: P74 P75

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N2001-485987

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 95/00609

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B41K1/00 G03F7/00 H01L21/768 B41C1/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 B41K G03F H01L B41C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ADVANCED MATERIALS, vol. 7, no. 5, May 1995, WEINHEIM DE, pages 471-473, XP000533523 Y. XIA ET AL.: "Reduction of Size of Features of Patterned SAMs Generated by Microcontact Printing with Mechanical Compression of the Stamp" see the whole document ---	1-9
Y	FR,A,2 663 760 (AMRI DAHBIA) 27 December 1991 see page 2, line 3 - line 6 ---	1-9
Y	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 24, no. 1B, June 1981, NEW YORK US, pages 637-638, XP002001686 "Store Logo Stamp Printer" see the whole document ---	3
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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- \*&\* document member of the same patent family

Date of the actual completion of the international search

26 April 1996

Date of mailing of the international search report

07.06.96

Name and mailing address of the ISA

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NL - 2280 HV Rijswijk  
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Fax (+ 31-70) 340-3016

Authorized officer

Rasschaert, A

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 95/00609

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 26, no. 11, April 1994, NEW YORK US, pages 5993-5994, XP002001687 M.J. BRADY ET AL.: "Self-aligned Optical Fiber/Laser Structure" see the whole document ---	4
Y	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 29, no. 2, July 1986, NEW YORK US, pages 560-562, XP002001688 "Method for Assembling a multilayer planar object" see the whole document ---	4
A	EP,A,0 583 714 (DU PONT) 23 February 1994 see the whole document ---	1
A	ADVANCED MATERIALS, vol. 7, no. 7, July 1995, WEINHEIM DE, pages 649-652, XP000520481 J.WILBUR ET AL.: "Lithographic Molding : A convenient Route to Structures with Sub_Micron Dimensions" see the whole document ---	1-9
A	GB,A,1 431 462 (AGFA GEVAERT AG) 7 April 1976 see the whole document -----	1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 95/00609

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR-A-2663760	27-12-91	NONE	
EP-A-0583714	23-02-94	US-A- 5270078 CA-A- 2103863 JP-A- 6219069	14-12-93 15-02-94 09-08-94
GB-A-1431462	07-04-76	DE-A- 2253944 BE-A- 806432 CA-A- 1005329 CH-A- 582723 FR-A- 2206704 JP-A- 49079240	09-05-74 24-04-74 15-02-77 15-12-76 07-06-74 31-07-74

Form PCT/ISA/210 (patent family annex) (July 1992)



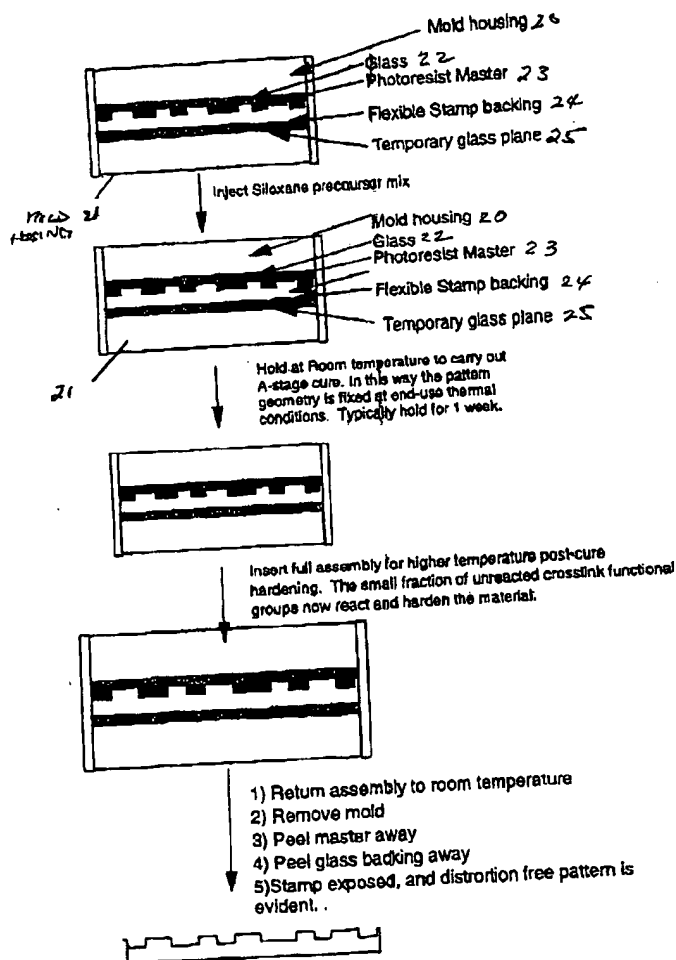
US 20020130444A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0130444 A1**  
(43) **Pub. Date: Sep. 19, 2002**(54) **POST CURE HARDENING OF SILOXANE STAMPS FOR MICROCONTACT PRINTING**(52) **U.S. Cl. .... 264/519**(76) **Inventor: Gareth Hougham, Ossining, NY (US)**(57) **ABSTRACT**

Correspondence Address:

Thomas A. Beck  
26 Rockledge Lane  
New Milford, CT 06776 (US)(21) **Appl. No.: 09/809,440**(22) **Filed: Mar. 15, 2001****Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... B29C 35/02; B29C 45/00;  
B29C 71/02**

Microcontact printing stamp which achieves both the required dimensional integrity for pattern faithfulness and desired mechanical properties, primarily high elastic modulus. With vinyl addition-type siloxane precursor mixtures, where crosslinking (curing) can take place at either room temperature or higher temperature, a two-step cure produces the desired combination of properties. The article is cured at room temperature for an extended period and then cured at a higher temperature of about 60° C. The resulting stamp has desirable properties.

**Finished Stamp - Little distortion evident**





US 20020073861A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0073861 A1**  
Blees et al. (43) **Pub. Date: Jun. 20, 2002**(54) **STAMP, METHOD, AND APPARATUS****Publication Classification**(76) **Inventors:** **Martin Hillebrand Blees**, Eindhoven  
(NL); **Peter Jan Slikkerveer**,  
Eindhoven (NL); **Sigrid Maria Roman**  
Gelderland, Eindhoven (NL)(51) **Int. Cl.<sup>7</sup>** ..... **B41K 1/38; B41F 31/00**(52) **U.S. Cl.** ..... **101/327**

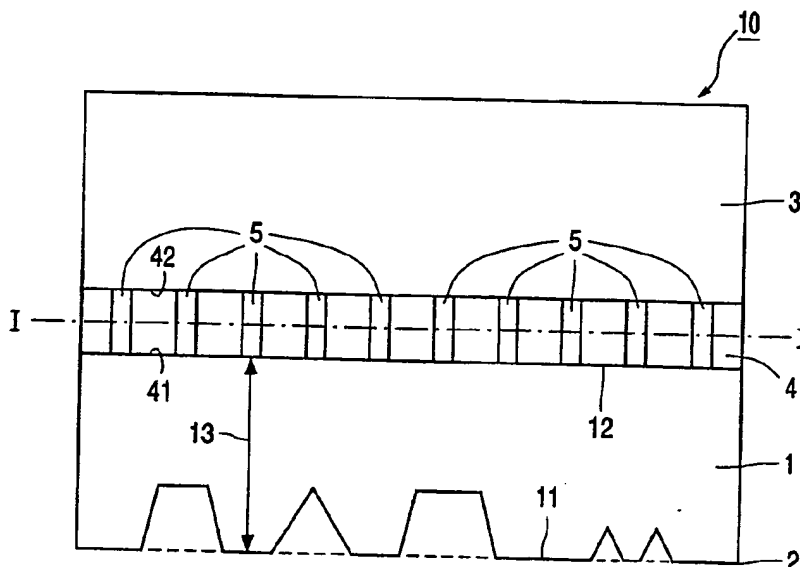
Correspondence Address:  
**Michael E. Marion**  
**U.S. Philips Corporation**  
**580 White Plains Road**  
**Tarrytown, NY 10591 (US)**

(57) **ABSTRACT**

The stamp (10) for use in a lithographic process, such as patterning a surface layer, of the invention has a stamp body (1) with a first (11) and a second side (12), at which first side (11) a printing face (2) is present and at which second side (12) a stack of a carrier body (4) and a reservoir (3) for liquid are present. The carrier body contains channels (5) in order that the liquid can be transported from the reservoir (3) to the stamp body (1) and further to the printing face (2). The stamp may be embodied as a cylinder, allowing a continuous lithographic printing process. This process results in patterns on a micron or submicron scale. The stamp (10) may furthermore be included in a larger apparatus.

(21) **Appl. No.:** 09/990,435(22) **Filed:** Nov. 21, 2001(30) **Foreign Application Priority Data**

Nov. 22, 2000 (EP) ..... 00204123.4

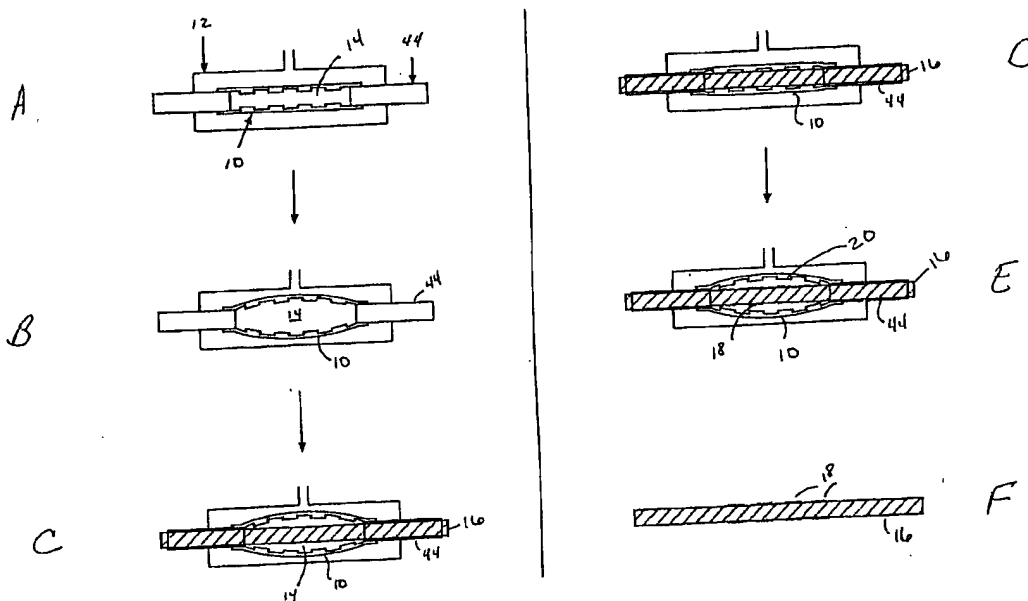




US 20020050220A1

(19) **United States**(12) **Patent Application Publication**  
**Schueller et al.**(10) **Pub. No.: US 2002/0050220 A1**(43) **Pub. Date: May 2, 2002**(54) **DEFORMABLE STAMP FOR PATTERNING  
THREE-DIMENSIONAL SURFACES****Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... B41M 1/00; B41L 47/02;  
B41L 3/02**(52) **U.S. Cl. .... 101/486; 101/368**(76) **Inventors: Olivier Schueller, Somerville, MA  
(US); Enoch Kim, Boston, MA (US);  
George Whitesides, Newton, MA (US)**(57) **ABSTRACT****Correspondence Address:**  
**Choate, Hall & Stewart**  
**Exchange Place**  
**53 State Street**  
**Boston, MA 02109 (US)**(21) **Appl. No.: 09/929,736**(22) **Filed: Aug. 14, 2001****Related U.S. Application Data**(63) **Non-provisional of provisional application No.  
60/225,175, filed on Aug. 14, 2000.**

A deformable stamp for patterning a surface. The stamp can be placed in contact with an entire 3-dimensional object, such as a rod, in a single step. The stamp can also be used to pattern the inside of a tube or rolled over a surface to form a continuous pattern. The stamp may also be used for fluidic patterning by flowing material through channels defined by raised and recessed portions in the surface of the stamp as it contacts the substrate. The stamp may be used to deposit self-assembled monolayers, biological materials, metals, polymers, ceramics, or a variety of other materials. The patterned substrates may be used in a variety of engineering and medical applications.





US 20010027570A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0027570 A1****Blees**(43) **Pub. Date: Oct. 4, 2001**

(54) **STAMP FOR USE A LITHOGRAPHIC  
PROCESS, METHOD OF MANUFACTURING  
A STAMP, AND METHOD OF  
MANUFACTURING A PATTERNED LAYER  
ON A SUBSTRATE**

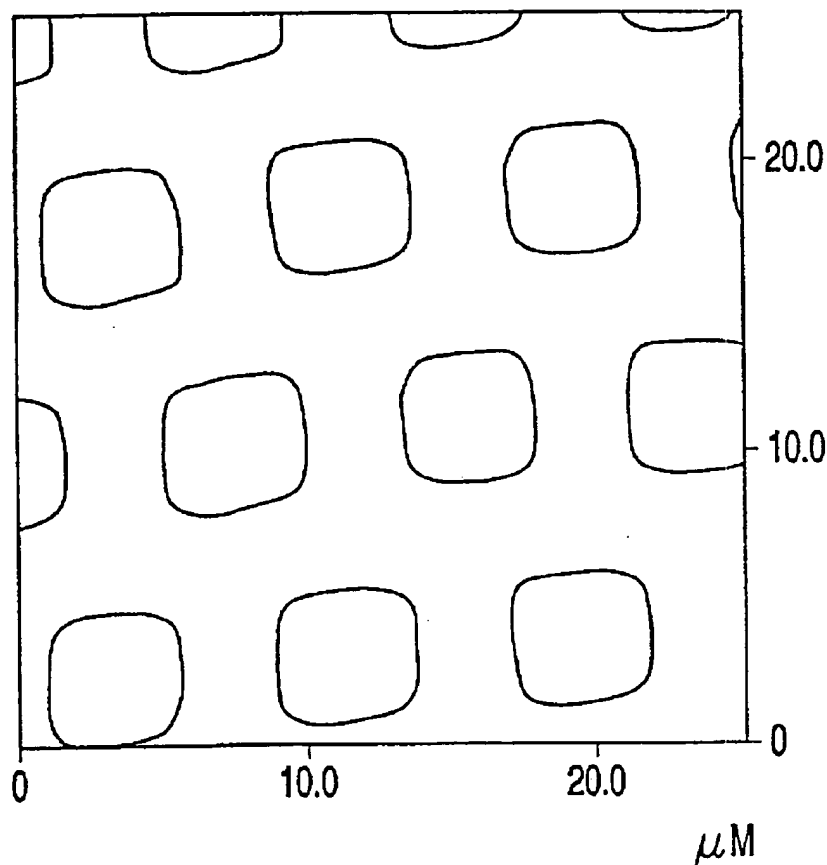
**Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... G03H 1/04; B44C 1/22**(52) **U.S. Cl. .... D18/15; 216/13; 216/48; 216/67;  
430/1; 438/689; D18/36**

(76) **Inventor: Martin Hillebrand Blees, Eindhoven  
(NL)**

**Correspondence Address:  
Corporate Patent Counsel  
U.S. Philips Corporation  
580 White Plains Road  
Tarrytown, NY 10591 (US)**

(21) **Appl. No.: 09/759,179**(22) **Filed: Jan. 12, 2001**(30) **Foreign Application Priority Data****Feb. 7, 2000 (EP) ..... 00200398.6****ABSTRACT**

The stamp (10) for a lithographic process, such as patterning a surface layer, of the invention has a stamp body (5) with at least a first recess (11) formed therein, which recess defines a first aperture (15) in the printing face (3) of the stamp (10). The first recess (11) narrows with increasing distance to the printing face, while any cross-section of the first recess, when perpendicularly projected on the printing face (3), will lie within the aperture (15). The printing face may comprise small (11, 12) and large apertures (13) as well as small surfaces (14) in between apertures, while it is nevertheless able to produce prints which are accurate replicas of the printing face. Even details on a submicron scale can be adequately printed. The stamp (10) can be manufactured by a method which comprises anisotropic etching of a first body to make a mold and replicating the mold in the printing face (3) of the stamp (10).





US 20010013294A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0013294 A1****Bruno et al.**(43) **Pub. Date: Aug. 16, 2001**(54) **STAMP DEVICE FOR PRINTING A PATTERN  
ON A SURFACE OF A SUBSTRATE**(30) **Foreign Application Priority Data**

Dec. 31, 1999 (EP) ..... 99126245.2

(76) **Inventors: Michel Bruno, Adliswil (CH); Heinz  
Schmid, Waedenswil (CH); Emmanuel  
Delamarche, Adliswil (CH); Alexander  
Bietsch, Kilchberg (CH)****Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... B41K 1/38; B41F 31/00**(52) **U.S. Cl. .... 101/327**

Correspondence Address:

**Robert M. Trepp****IBM CORPORATION****Intellectual Property Law Dept.****P.O. Box 218****Yorktown Heights, NY 10598 (US)**(57) **ABSTRACT**(21) **Appl. No.: 09/752,616**(22) **Filed: Dec. 28, 2000**

The invention describes a stamp device for printing a pattern on a surface of a substrate having a two-sided rigid carrier layer providing on it's first side a patterned layer made of a first material and being combined on it's second side with a soft layer made of a softer material than said first material.